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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,711	01/18/2001	Ivo Raaijmakers	ASMEX.186DV1	7574

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EXAMINER

ROMAN, ANGEL

ART UNIT PAPER NUMBER

2812

DATE MAILED: 08/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,711

Applicant(s)

RAAIJMAKERS ET AL.

Examiner

Angel Roman

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Note: As a result of applicant response filed 07/15/02, the finality of the previous office action has been withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vo U.S. Patent 5,097,381A in view of Mazuré et al. U. S. Patent 5,677,219.

Vo discloses an integrated capacitor formed in a trench having a width of no more than about 0.25 micrometers, a depth of greater than about 7 micrometers and an aspect ratio greater than about 20:1 (see column 5, lines 35-45), comprising; a dielectric layer 54 lining the trench; and a conductively doped polysilicon layer 52 (see column 5, lines 20-30) filling the trench. The trench is formed in a semiconductor substrate 40 (see Abstract). Vo also discloses filling the trench with heavily doped polysilicon functioning as a conductor cell node (see column 5, lines 21-29)

Vo is applied as above but lacks anticipation on disclosing an specific method used to form the heavily doped polysilicon; and disclosing arsenic as an impurity comprised in the doped polysilicon.

With respect to disclosing a specific method used to form the heavily doped polysilicon and disclosing arsenic as an impurity comprised in the doped polysilicon, Mazuré et al. discloses an as deposited doping process for forming a polysilicon plug doped with arsenic for a trench capacitor. In view of this disclosure it would have been obvious to a person having ordinary skills in the art at the time the invention was made to used the as deposited doping process using arsenic as an impurity comprised in the doped polysilicon as disclose in Mazuré et al. in the primary reference of Vo since as deposited doping is a conventional process used to form doped polysilicon layers and because arsenic is a conventional impurity used to dope N-type polysilicon in trench capacitor fabrication processes. Furthermore, using as deposited doping to form the

doped polysilicon layer in the primary reference of Vo is only considered to be routine optimization of the art disclosed in Vo and a person having ordinary skills in the art at the time the invention was made would have been able to use such a conventional process to form the heavily doped polysilicon layer in the primary reference of Vo based among other things on a desire accuracy and manufacturing cost of the deposition process.

Response to Arguments

4. Applicant's arguments with respect to claims 33-37 have been considered but are moot in view of the new ground(s) of rejection. Regarding applicant's argument that as deposited polysilicon denotes a structural difference in the polysilicon material crystallinity as compared to other deposition methods, on page 2, lines 19-20 of applicant response, the applicant admits that the phrase "as-deposited" describes a method of formation, applicant is reminded that method limitations have no patentable weight in device claims; furthermore the primary reference of Vo discloses filling the trench with heavily doped polysilicon this clearly suggests doping the layer as deposited and not forming the layer and doping afterwards.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (703) 306-0207. The examiner can normally be reached on Monday-Friday 8:30am-6:00pm.

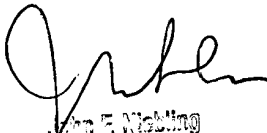
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

AR
July 29, 2002


John F. Niebling
Supervisory Patent Examiner
Technology Center 2800